NOTE ON SOME BRITISH *COCCIDÆ* (No. 6).

BY J. W. DOUGLAS, F.E.S.

Aspidiotus ostreæformis.

Aspidiotus ostreæformis, Curt., Gard. Chron., 1843, p. 805 and fig.

Nec Diaspis ostreæformis, Sign., Ess. Cochin., p. 121, pl. v, fig. 4; *nec D. ostreæformis*, Comst., "Report," 1880, p. 311, pl. xv, fig. 4, and "Report," 1883, p. 94, No. 65. ? *Diaspis ostreæformis*, Goethe, Jahrbuch d. nass. Ver. für Naturkunde, 1884, p. 114, pl. i, fig. 1—5.

♀ scale round, 1—1·5 mm. in diameter, slightly convex, greyish-black; exuviæ nearly central, unicolorous, ashy-grey or usually dark yellow or rust colour; the surface rough or striate, often with a grey efflorescence (the largest were abnormally swollen and parasitized).

♂ scale much smaller, oval; exuviæ more lateral.

♀ adult: the last abdominal segment with five groups of spinnerets, anterior 3—5, anterior-lateral each 6—9, posterior-lateral each 6—10; the margin with two median lobes, followed on each side by two deep emarginations, between which is a spinose hair, and but one further on towards the next segment, but these are not always present or apparent.

♂ imago ochreous, thorax with a deep semi-oval depression, with a black transverse streak at the base between the wings; wings large, broad, whitish; antennæ hairy, stout, almost as long as the body, apparently 8-jointed, but having also two very minute, intermediate, as adjuncts.

Curtis described his *Aspidiotus ostreæformis* thus:—

"On the bark of a pear tree, covered with scurfy scales, exactly the colour of the bark, mostly orbicular, but a few oval; dark ashy-grey, a little convex, slightly wrinkled, margin membranous and whitish, and between it and the centre a raised semi-transparent spot of an ochreous or rusty colour; when the scale is removed a whitish or greyish spot is apparent upon the bark, on this the ♀ rests; inside of scale hollow like a shallow cup, at the top of which the yellowish horny spot very distinct; outer margin of scale broad, whitish, formed of the membrane which attaches it to the bark.

"The ♀ orbicular heart-shaped, fleshy, fat, shining, yellowish-white, with a few short hairs scattered over the sides; tail distinct, quite yellow, with a suture beneath; neither legs nor antennæ, but on the under-side, a minute nipple, from which issued the rostrum of considerable length.

"Male under an oval scale; bright ochreous; head small, eyes black, antennæ nearly as long as the animal, hairy, stout, 8-jointed; thorax large, ovate, collar distinct, a black transverse stripe between the wings; scutellum large, semi-ovate. Wings ample, whitish, rounded; halteres of two joints ending in a curved bristle."

Signoret places *Aspidiotus ostreæformis*, Curtis, as a *Diaspis*, saying (p. 122):—

"The scales of the ♂ are a little longer than those of the ♀, brown, with the exuviæ on one side; but afterwards (p. 441) he says this indication is erroneous, and that "he has always found the ♂ scale very small, white, carinated, with the exuviæ at the extremity, as in all other scales of the group."

Of the ♀ he says:—"There are five groups of spinnerets; median 10—12,

superior lateral 12—13, inferior lateral 13—14. The margin has two median trilobed lobes; on each side some small emarginations, and beyond, as far as the preceding segments, 9—10 spines." In our species the number of spinnerets is much less, the median lobes are not trilobed, and the marginal spines are certainly not 9—10, only two or three.

Comstock described his *Diaspis ostreæformis* from materials received from Dr. Signoret, and therefore it is the same as Dr. Signoret's.

Goethe's *Diaspis ostreæformis* appears, on the whole, to be the *Aspidiotus ostreæformis* of Curtis, for he says:—"I observe that the scales of the ♂ are not essentially different from those of the ♀;" therefore, they are not those of a *Diaspis*. He makes out 9 joints in the antennæ of the ♂, but, as before stated, this may only be a matter of observation. The doubt about the identity of his species with that of Curtis arises from his statement of the number of spinnerets in the respective groups being—"middle 10—12, upper lateral 12—13, lower lateral 13—14,"—being the same as given by Signoret for his species, but not the same as found in ours. Mr. G. S. Saunders prepared a number of specimens that I had collected from plum, apple, pear and cherry trees; he found they all exhibited exactly the same characters, and the number of spinnerets, &c., to be as I have stated above.

About the middle of March last I noticed that the trunk of a plum tree had on the bark numerous white spots about a millimètre in diameter, and on examination I saw that they were the ventral skins of old scales of an *Aspidiotus* that had fallen off and left these affixed. Looking more closely I saw other scales of a previous generation still remaining, but they were loose and came off with a touch; and there were also numerous recent scales adjacent, either in batches or single, tightly adherent. Other scales of the same sort were abundant on apple, pear and cherry trees. From some that I removed, still attached to pieces of the bark, and put into gauze-covered glasses indoors, I obtained a few males early in May. My description, made at the time, agreed so closely with that of Curtis's *Aspidiotus ostreæformis*, that I quite believed I had found that species; but there was just room for a doubt, because, although I diligently searched, I could not detect the "very small, white, carinated scale" which Signoret attributes to the ♂ of this species, and which gives the character of *Diaspis*. However, I eventually came to the conclusion that Signoret's species was not the same as that of Curtis, as he had deemed; but in order to elucidate the matter, I sent some examples to Professor Comstock, of Cornell University, Ithaca, New York, the State Entomologist, than whom no one has had greater experience in the examination of *Diaspina*, and he having very kindly devoted a considerable attention to them, writes thus:—

"I think now that the species described by Curtis is an *Aspidiotus*, and I believe that the species we are studying is the one. The description agrees well with this species, remarkably well for one written at that time; even the hairs on the sides of the female figured by Curtis are represented by tubular spinnerets in the position indicated. Signoret evidently made a mistake in his determination; fortunately the two insects belong to different genera, so that there need be no change of specific names. I am very glad to have this matter cleared up, for I have never been satisfied with Signoret's determination.

"*Aspidiotus ostreæformis*, Curtis (as we now understand it), resembles my *A. juglans-regiæ* very closely; I expect that my name will prove to be a synonym. The scales on apple, cherry and locust (see my report for 1880, p. 301) are smaller than those I found in California on English walnut, and are darker, and there are very slight differences in the margin of the last segment of the female; but I am inclined to believe that the form on walnut is a climatic or phytophagic variety of *A. ostreæformis*."

This opinion of one who is so good an authority is, I think, very satisfactory.

Parlatoria Proteus.

Aspidiotus Proteus, Curt., Gardeners' Chronicle, 1843, p. 676 and fig.

Parlatoria orbiculæris, Targ.-Tozz. Cat., 42 (1868).

Parlatoria Proteus, Sign., Ess. Cochin., 132, pl. 5, fig. 5 (1869); Comst., Report, 1883, p. 114, 96, pl. ii, fig. 7, 7*a*, pl. iv, fig. 3.

The genus *Parlatoria*, one of the most remarkable of the sub-family *Diaspina*, primarily indicated by Targioni-Tozzetti for two species, *Aspid. Proteus*, Curt., and *Coccus ziziphi*, Lucas, was first characterized by Signoret from the same species in part 5 of his "Essai sur les Cochinelles," published in the "Annales" of the Entomological Society of France, 1869, as follows:—

"♀. Scale long, narrow at the base, then abruptly enlarged, exuviæ rounded-oval. Only four groups of spinnerets. The margin of the anal segment as if crenulated, and having some plate-like scales in each of the emarginations. On the surface, near the margin, two rows of isolated spinnerets. ♂ scales of the same colour as that of the ♀, and much smaller."

The most important generic character is the structure of the outer margin of the last segment of the abdomen of the female, namely, three large lobes, and normally, a fourth smaller, on each side of the median, each bearing a basal spine, separated by deep emarginations, in each of which are flat plates, oblong, parallel-sided, as long as the lobes, their extremity having an acicular fringe, viz., two between the median lobes, two between the 1st and 2nd, and three between the 2nd and 3rd; the bases of the lobes connected by crescent-shaped thickenings of the integument. Between the 3rd and 4th lobes three plates varying in form. On the lateral margins of the three preceding segments, as well as some on the margin of the last beyond the lobes, are fringed plates, usually palmate, but varying in form and number from five to ten.

In *P. Proteus* the ♀ scale, normally elongate, but often short, flat, broad-oval, pale yellowish-brown, the first exuviæ rounded-oval, the 2nd long-oval and conspicuously large, the 3rd smaller. Length, 1·5—2 mm.

♂ scale narrow, linear, coloured like the ♀, but the exuviæ at the base black; the middle not keeled, but depressed, or with a longitudinal fissure when the imago has come out. Length, 1 mm.

♀ adult: only three marginal lobes on the last segment, the 4th being replaced by a fringed plate.

♂ imago clear reddish-yellow, wings white with red nerves (Signoret).

In May last Mr. P. Cameron sent me some leaves of *Dendrobium* and *Oncidium* having on the under-side, along the midrib, numerous scales, which proved to be those of the ♀ of *Parlatoria Proteus*; on the same leaves were also a few of the ♂ scales, situated either singly or in small batches, but empty.

Var. *crotonis*.—At the same time Mr. Cameron sent me some leaves of a *Croton*, to which were attached, on the under-side, along the midrib and under the incurved edges, many scales exactly like the ♀ of *P. Proteus*. But examination of the insect beneath, made by Mr. G. S. Saunders, showed a divergent structure of the margin of the last segment which approximated that of *P. Pergandii*, and this being a species described by Prof. Comstock, and of which there was a *quasi* variety—*camelliæ*— (Report, 1883, p. 114), I thought it best to send him some of these scales. He says respecting them:—

"The *Parlatoria* on *Croton* approaches *P. Pergandii* in having the 4th and 5th lobes, but these are very small. Laterad of the 5th lobe there are fewer plates than in either of the species described. The scale resembles that of *P. Proteus*."

In December I received from Mr. Sowerby, Royal Botanic Society's Gardens, Regent's Park, leaves of three species of *Croton* on which these scales were abundant.

On plate iv of his "Report" for 1883, Professor Comstock has figured the margin of the last segment of the ♀ of the three known species of *Parlatoria* (including the var. *camelliæ*) showing the difference of structure at one view.

The Genus LEPIDOSAPHES, Shimer.

Only quite recently there has come under my notice a Note by Dr. Franz Löw, in the "Verhandl. der k. k. zool.-botan. Gesells. Wien," 1882, p. 522, to the effect that the genus *Lepidosaphes*, Shimer, founded on *Aspidiotus pomorum*, Bouché, published in vol. i of the "Transactions of the American Entomological Society," 1868, has priority over Signoret's genus *Mytilaspis*, characterized in part 6 of his

"Essai sur les Cochinelles," which was presented to the Société entomologique de France, 25th March, 1868, and published in the Society's "Annales," Tome X, p. 91. Signoret (*l. c.*) notices Shimer's work thus: "Tout dernièrement M. Shimer a créé pour ces espèces un nouveau genre qu'il appelle *Lepidosaphes*: nous aurions adopté volontiers ce nom, si déjà M. Targioni et nous-même n'avions *publié* l'*Aspid. conchiformis* sous le nom générique de *Mytilaspis*, nom qui lui est très-bien approprié par sa ressemblance avec une moule." Targioni, in his Memoir, p. 44, also refers to *Lepidosaphes*, Shimer, but only as a synonym of *Mytilaspis*.

Not being able at that time to put my hand upon Shimer's paper, and being then in the act of writing to Professor Comstock, I asked his opinion. Before I had his answer I had read Dr. Shimer's article, and a very interesting account it is of the structure and natural history of *Aspidiotus pomorum*, Bouché (erroneously cited as *Coccus conchiformis*, Gmel.), from the newly-hatched larva to the egg-laying female; and it is noteworthy that with the most careful continuous observation he did not see a male in any condition, this being confirmatory of all other observers. Shimer does not appear to have investigated the structure or metamorphoses of any other species of *Diaspina*, or he would have seen that most of the characters he puts as generic belong also to most of the Sub-family. But the consideration of any question of dubious priority of publication is rendered superfluous by the facts that in the definition of *Lepidosaphes* some important generic specialities of the insect, and of other species naturally associated with it (*e. g.*, the peculiar form of the scale, &c.), are omitted, and one, "male unknown"—a specific character only—is inserted; therefore, the genus is not equivalent to the more fully characterized *Mytilaspis*, and cannot be adopted in its place. The Family *Lepidosaphidæ*, sought to be established on the same narrow grounds as the genus, merges into *Diaspis* (now *Diaspina*), a division made by Costa in 1827.

Subsequently, I received Professor Comstock's reply, as follows, his conclusions and mine being practically the same:—"It is quite probable that the name *Lepidosaphes* was published before *Mytilaspis*, but I think that the former name has no claim to recognition. Shimer made the (to him) wonderful discovery that the scale of the apple tree bark-louse was distinct from the body, and that the tarsi of the larvæ bore digituli. These characters, together with the supposed absence of tarsal claws, he thought of sufficient importance to establish a new genus, and to make it the type of a new family. This is the gist of two pages of small print. If *Lepidosaphes* stands for anything, it includes the whole of the scale-bearing *Coccidæ*, *i. e.*, the *Diaspina*. The name *Diaspis* was proposed for this group by Costa in 1827. *Lepidosaphes* is therefore a synonym of the much older name *Diaspis*, and had no claim to recognition in the subsequent division of the genus."

Addendum.

Pulvinaria camellicola (*cf.* vol. xxii, p. 159). I have this from Kew Gardens on the Orchids *Oncidium papilio* and *Calanthe natalensis*.

8, Beaufort Gardens, Lewisham:
February, 1887.